

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules, each difunctional surface-modifying molecule comprising a hydrophobic portion preferentially associated with the substrate and a hydrophilic portion, wherein the surface-modifying molecules are crosslinked to form a crosslinked hydrophilic polymeric network at the surface of the membrane.
2. (Original) The membrane according to claim 1, wherein the hydrophilic portion of the surface-modifying molecules comprises at least two crosslinking active groups.
3. (Original) The membrane according to claim 2, wherein the crosslinking active group comprises a carbon-carbon double bond.
4. (Original) The membrane according to claim 1, wherein the difunctional surface-modifying molecules comprise difunctional acrylate molecules.
5. (Original) The membrane according to claim 1, wherein 100% of molecules associated with the substrate comprise difunctional surface-modifying molecules.
6. (Currently amended) The membrane according to claim 1, wherein the hydrophobic portion is a hydrophobic alkyl, aromatic group, or olefinic hydrocarbon group.
7. (Currently amended) The membrane according to claim 1, wherein the hydrophobic portion comprises an aromatic hydrocarbon molecule.
8. (Original) The membrane according to claim 7, wherein the aromatic hydrocarbon comprises a bisphenol A group.

9. (Currently amended) The membrane according to claim 1, wherein the hydrophobic portion does not form covalent bonds with the surface.

10. (Currently amended) The membrane according to claim 1, wherein the hydrophilic portion is positively charged.

11. (Currently amended) The membrane according to claim 1, wherein the hydrophilic portion is negatively charged.

12. (Currently amended) The membrane according to claim 1, wherein the hydrophilic portion comprises a neutral charge.

13. (Currently amended) The membrane according to claim 1, wherein the hydrophilic portion comprises the general formula $[-X_{n1}-Y-CR=CH_2]_{n2}$ where X is independently selected from the group consisting of $(-CH_2-CH_2-O-)$; $(-CH_2-O-)$; $(-CH_2-CH(COOH)-)$; $(-CH_2-CH(OH)-)$; Y is selected from the group consisting of $([-CH_2-]_{n3})$; $(-COO-)$; n_1 is from about 1-50; n_2 is from about 1-2; and n_3 can be from about 1 to about 50.

14. (Original) The membrane according to claim 1, wherein the difunctional surface modifying molecules are polymerized on the substrate surface after being preferentially adsorbed with the substrate surface.

15. (Original) The membrane according to claim 1, wherein the difunctional surface molecules comprise ethoxylated (30) bisphenol A diacrylates.

16. (Currently amended) The membrane according to claim 1, wherein the difunctional surface molecules are polymerized using a photoinitiator, and wherein the photoinitiator is preferentially adsorbed by the substrate surface.

17. (Currently amended) The membrane according to claim 1, wherein the difunctional-surface molecules are polymerized using a photoinitiator that comprises a substantially hydrophobic molecule.

18. (Currently amended) The membrane according to claim 1, wherein the difunctional-surface molecules are polymerized using a photoinitiator selected from the group consisting of 1-hydroxy-cyclohexyl-phenyl-ketone; 2-benzyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1; 50% 1-hydroxy-cyclohexyl-phenyl-ketone and 50% benzophenone; 25% bis(2,6-dimethoxybenzoyl)-2,4,4-trimethyl pentyphosphineoxide and 75% 2-hydroxy-2-methyl-1-phenyl-propan-1-one; 2,2-dimethoxy-1,2-diphenylethan-1-one; bis(2,4,6-trimethylbenzoyl)-phenylphosphineoxide; 80% 2-hydroxy-2-methyl-1-phenyl-propan-1-one and 20% 1-hydroxy-cyclohexyl-phenyl-ketone; 25% bis(2,6-dimethoxybenzoyl)-2,4,4-trimethyl-pentyphosphineoxide and 75% 1-hydroxy-cyclohexyl-phenyl-ketone; 2-hydroxy-2-methyl-1-phenyl-propan-1-one; benzophenone; 50% 2,4,6-trimethylbenzoyl-diphenyl-phosphineoxide and 50% 2-hydroxy-2-methyl-1-phenyl-propan-1-one; bis(~~5~~-2,4-cyclopentadien-1-yl)-bis(2,6-dicluoro-3-(1H-pyrrol-1-yl)-phenyl)titanium; 2-methyl-1[4-(methylthio)phenyl]-2-morpholinopropan-1-one; 30% 2-benxyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1 and 70% ~~2,2-dimethoxy-1,2-diphenylethan-1-one IRGACURE 651~~; and 1-[4-(2-hydroxyethoxy)-phenyl]-2-hydroxy-2-methyl-1-propane-1-one.

19. (Original) The membrane according to claim 1, wherein the membrane has an average pore size of from about 0 μm to about 10 μm .

20. (Original) The membrane according to claim 1, wherein the hydrophobic substrate comprises polyvinylidene fluoride.

21. (Original) The membrane according to claim 1, wherein the membrane is wettable within less than about 30 seconds after drying upon contacting with an aqueous solution.

22. (Original) The membrane according to claim 1, wherein the membrane is autoclavable.

23-47 (Cancelled).

48. (New) The membrane according to claim 1, wherein the hydrophobic portion is capable of significant association with the substrate.

49. (New) The membrane according to claim 1, wherein the composite porous membrane has a pore size prior to coating with difunctional surface-modifying molecules that is substantially the same as the pore size of the composite porous membrane after coating with difunctional surface-modifying molecules.